REPORT

OF THE

BOARD OF MANAGERS

TO THE

Stockholders

OF THE

MINE HILL AND SCHUYLKILL HAVEN

RAILROAD COMPANY,

AT THEIR ANNUAL MEETING, JANUARY 10, 1859.

PHILADELPHIA:
E. C. AND J. BIDDLE.
1859.

OFFICERS

FOR 1859

PRESIDENT.

JOHN C. CRESSON.

MANAGERS.

SAMUEL MASON,
JOHN LIVEZEY.
JEREMIAH HACKER,
JOSEPH CRESSON,
MORDECAI L. DAWSON,
SAMUEL WELSH,
I. PEMBERTON HUTCHINSON,
JAMES R. GREEVES,
JOSHUA W. ASH,
S. MORRIS WALN.

TREASURER.

SAMUEL MASON.

SECRETARY.

WILLIAM BIDDLE.

Thirtieth Annual Report

TO THE STOCKHOLDERS OF THE MINE HILL AND SCHUYLKILL HAVEN RAILROAD COMPANY.

THE Board of Managers of the Mine Hill and Schuylkill Haven Railroad Company respectfully present to the stockholders their thirtieth annual report.

The business of the road, as exhibited in the monthly returns of the Collector's office, has amounted to 1,434,494½ tons of coal, and 17,588½ tons of other articles, making together 1,452,083½ tons during the year 1858, and an aggregate to this time of 16,357,787 tons.

During the first half of the year there was a considerable falling off in the tonnage in comparison with the corresponding term of the previous year: the trade of the later months exhibited a marked increase, but not sufficiently great to restore the whole of the previous deficiency. Among the causes of this result there are two of local and temporary character that have been especially operative upon our trade. One is the stoppage of numerous large manufactories in the valley of the Schuylkill, whose supply of fuel was obtained entirely from this region; the other, the suspension of mining at several collieries of large class in consequence of the destruction of the works by fire, and stoppages by other accidents. The reconstruction of the machinery thus destroyed has already been completed in some instances, and is to be expected at an early day in others, so that the number of active collieries will probably be much greater during the coming season than it was in the last; and as soon as the iron furnaces and other im-

portant factories located along the Schuylkill shall again be brought into operation, a greatly increased tonnage must accrue to our road from these additions to the productive capacity of this mining district. As the details of the various works of extension and repair carried on during the year are fully exhibited in the accompanying report of the Chief Engineer and Superintendent, it is deemed unnecessary now to advert to them further than to state that the good condition of repair and efficiency in which the road and its machinery have been maintained, is very satisfactory to the President and Managers, who take pleasure in bearing testimony to the diligence and care with which the officers and other employees have fulfilled their respective duties. The report of the engineer also contains a statement carefully compiled from the records of the motive power department, presenting a body of valuable statistics relative to a subject of very great importance in railway economies, the use of anthracite for fuel in locomotive engines. A very general desire exists among those who are engaged in the management of railroads for a fuel that shall be more convenient and economical than wood; and some such discovery is becoming almost a necessity, both along the Atlantic seaboard and on the western prairie lines. No other known fuel seems to possess the combined advantages of cleanliness, convenience and cheapness in so great degree as anthracite; and its adoption would without doubt have been very extensive ere this, were it not for a belief commonly prevailing that its effective use requires peculiar and costly arrangements for preventing the rapid destruction of the boiler furnace, or fire-box.

On this point these statistics, which are now first made public, furnish most conclusive proof that the prevalent belief is based on insufficient practical experience; for the results here given of ten years' continued use of anthracite in a number of engines of various classes, engaged in constant and most laborious duty, present incontrovertible evidence that no such destructive effect is necessarily attendant upon its use in boilers of plain and inexpensive construction.

To make the correctness of this position most evident, a brief analysis will now be given of the facts that have special bearing on this important point.

By arranging the different engines in collated series according to the date of their commencing the use of this fuel in their present fire-boxes, it will be seen that among the twenty-five engines, enumerated, there are two whose fire-boxes have been in use for ten years; one of them without any extensive repairs, during the whole of that time, and the other with a single general repair which consisted in the renewal of the sheets in immediate contact with the fuel, at an expense so small as to be equal to only a small fraction, say one-tenth of the cost of an entire new fire-box.

A third engine has continued in use for eight years without any renewal of its fire-box, and with but one general repair similar to that just described. All of these three boilers are reported to be yet in good condition for further service of several years without general repairs. The average time these three engines have been in service with their existing fire-boxes is nine and a third years.

Their aggregate duty in that time is found upon examination of the monthly records of transportation to have been 333,000 miles of distance run, and haulage equal to 39,075,000 tons hauled one mile. The latter amount including the weight of cars as well as their contents.

The four engines next in age, as coal-burners, have been in service over six years. One of them has had a general repair of fire-box similar to the preceding, and two others are now in need of such repair.

Their average time of service is six and a half years, and their aggregate duty amounts to 271,000 miles run, and 59,037,500 tons hauled one mile. Three of these are of larger class than the first three, the weight on their driving wheels being 21 tons, while the former average less than 17 tons.

Next come four engines that have been using anthracite over five years, their average time being five and a half years, without any important repair of fire-box and with no need of any as yet. Three of these have a tractive weight of $24\frac{1}{2}$ tons, the fourth of $16\frac{1}{2}$ tons. Their aggregate duty has been 217,000 miles run, and 49,297,000 tons hauled one mile.

Among the remaining fourteen coal-burners, whose time of service is less than five years, only one has required any ex-

tensive repair, and this from a cause not dependent on the kind of fuel, being from neglect of water supply.

Leaving out of the account this exceptional case, there has been no entire renewal of a fire-box in a coal-burner within the last eight years, or, in other words, since the experience gained by two years' use of this fuel supplied the requisite practical knowledge for its proper management. The comparatively inexpensive repair before mentioned has, during all that time, been given to only three out of the whole number: but adding to these the two reported as wanting repair, will make five out of the eleven oldest coal-burners whose average time of service is nearly seven years, on the whole of which the aggregate cost of furnace repair does not equal the cost of a single renewal of an entire fire-box. The aggregate service performed in producing this result was 821,000 miles run, and 128,809,500 tons hauled one mile. Of the engines that have been in service less than five years, there are eleven whose average time of service is over three years, without any recorded furnace repairs, with an aggregate duty of 391,000 miles run, and 81,337,000 tons hauled one mile. These engines are all of the larger class, their tractive weight ranging from 24½ to 30 tons. Of the three engines omitted from this last account, two have been in service only one year or under, and the third is engine No. 20, whose fire-box was injured by deficiency of water. If we include all these, and also the results obtained with the two oldest coal-burners before a proper knowledge of the management of the fuel was acquired, we shall have the following combined result from all these engines: Three new fire-boxes and five general repairs, not equal in cost to another new fire-box, in 25 engines during nearly five years' average time of service, with an aggregate duty of 1,275,000 miles run, and 239,273,500 tons hauled one mile.

The value of these figures as evidence may be better understood if we bear in mind the fact, that the official records from which they are derived have been accumulating for many years in the daily routine of the business of the road, with no antecedent knowledge, or even thought, by the recording agents of the bearing they might have upon the question to which they are now for the first time collectively applied. It

is much to be desired that these records had embraced some other matters, of much practical value, such as the evaporative effect of the fuel used in this way, and the consumption of fuel and water for each mile run and ton hauled, but as they were instituted without any reference to their present application, they happen to contain only those facts that are most directly connected with the current daily business, and its monetary accounts.

In view of the evident value of such additional statistics, the attention of the proper officers has been directed to their collection and preservation for future reference. The results we have described have been obtained by a few slight changes of construction in the boiler furnace and proper care in management of the fire. A large area of grate, wide water space around the furnace, say $3\frac{1}{2}$ to 4 inches, a shallow fire-place, and large opening of exhaust nozzles so as to diminish the violence of the blast, are the chief mechanical requisites. To these have been added with much advantage several auxiliary contrivances, one for varying the effect of the exhaust blast by having the smoke pipe to slide telescopically under control of the fireman; another for stirring the fire by a regular motion derived from the engine axle and thrown into action at will; a third for heating the feed water and regulating its admission in such way that the feed may be kept on at all times, in quantity adjustable to the wants of the engine.

In practice, the points to be observed by the fireman are, to add fuel in small quantities, at frequent intervals; the coal to be broken as wanted, to uniform size, and freed from slate; to keep a shallow fire of uniform depth and compactness, over its whole area; and to prevent the formation of blowpipe channels through the burning mass which may throw their jets against the furnace walls. The exact numerical proportions of grate area must vary with circumstances of speed and mean working pressure in cylinders. Upon our road with a low speed, say about eighty revolutions a minute, 120 pounds maximum pressure in boiler, and cut off at half stroke, the proportion of one square inch area of grate, to four and a quarter cubic inches content of both cylinders has worked well.

Perhaps one square inch to four cubic inches would be

better, and might serve for higher speeds and greater mean working pressure in cylinders. The true measure would be the ratio of grate area to evaporative power needed, but our past records furnish no sufficient data for its determination.

The treasurer's accounts hereto annexed present a concise view of the finances of the Company, and the usual statistical tables show the general results of its business transactions from year to year.

The dividend of five per cent. on the capital stock declared this day will be payable on the 20th instant; until which date the books of transfer will necessarily be closed.

All which is respectfully submitted by order of the Board of Managers.

JNO. C. CRESSON,
President.

JANUARY 8, 1859.

REPORT

OF

ENGINEER AND SUPERINTENDENT.

TO J. C. CRESSON, ESQ.

President of the Mine Hill and Schuylkill Haven Railroad Company.

SIR: Agreeably to your request, I have prepared and now beg leave to submit to you the following report of the condition of the railroad, motive power, and other property owned by the Company, and placed under my charge, during the past year.

The coal trade presented many discouraging features during the season just closed, but they were not sufficient to check altogether the ardor and enterprise of the operators, and many new improvements have consequently been made to meet the demands of a period of greater prosperity in the iron and other manufacturing interests.

Among the most important of these are a new slope on Raush Creek by Messrs. H. Heil & Co.; a new slope and breaker on the West West Branch, by Messrs. Miller & Stahl; also a new breaker by the same firm, erected to supply the place of the Phœnix Colliery, which was burned last spring. A new breaker was erected by Messrs. Tyson & Co. on the Muddy Branch in place of the Salem Colliery, which was destroyed by fire last summer; this breaker is much larger and more substantial than the old one, and can furnish to the road a larger amount of coal. A new shaft is being sunk near West Wood, and the shaft buildings and hoisting machinery have been erected under the superintendence of Howell Fisher, Esq. The work of shafting has not proceeded far enough to determine the value of this improvement to the road, but the col-

liery is confidently expected by the owners to furnish not less than forty thousand tons per annum.

On the Big Run Branch, a slope and new breaker are in course of construction by J. P. Brock, Esq., and a new slope is being sunk by the Locust Mountain Co. a short distance north of Mr. M. G. Heilner's colliery. A new colliery of the largest class will be erected during the winter and spring by Messrs. Anspach & Co. opposite the colliery of Messrs. Bast & Pearson, at Big Mine Run. The Locust Mountain Co. have also projected another large operation north of the Locust Mt., at Big Mine Run, which will probably be constructed during this year.

These improvements will all doubtless be completed in time to furnish a large quantity of coal to your road if the market should demand it, and, although there are reasonable indications of a revival of those branches of industry upon which the prosperity of the anthracite coal trade mainly depends, yet it would be premature at this time to predict any specific amount of increase in the tonnage of the road this year above that of former seasons. The facilities for both mining and transporting coal from the West Branch and Mahanoy districts are now so great that a moderate degree of activity in the market rapidly increases the amount of weekly shipments, and consequently it would require but a limited period of greater demand to swell the tonnage of the road above the amount for the year just closed.

Railroad Department.

Notwithstanding the depressed condition of the trade, a large amount of necessary work has been done upon the road during the year to put it in a secure condition to meet the wants of the trade when it again revives.

On the Main Line Division a new track has been laid down to give siding room for cars and facilitate the weighing operations at the scales. The length of this track is thirty-one hundred and eight feet.

A new bridge over the township road was erected at this point. We have renewed two hundred and eighty-eight feet of track at the scales; one hundred and ninety-two feet at the

stone storehouse; eight hundred and thirteen feet near the Germantown bridge, and eleven thousand one hundred and sixty feet from the junction to Germantown. A reservoir, containing one hundred thousand gallons of water, has been constructed on the hill north of the depot, having sufficient head to throw water over all the Company's buildings. Some other improvements have been made on this division, among which are a passenger office, extensions of water stations, fire-plug pipes, hose, &c. &c. Two double and seven single switches were relaid on this division.

On the West Branch Division, two new switches were laid at the Minersville warehouse, and two new switches and a crossing were put in at the foot of the steep grade. At the Mine Hill Gap, the course of the creek was changed, and the water way of the bridges enlarged; the track was also removed to suit the other improvements. Fourteen hundred and ninety-four feet of track were renewed on this division.

When the track was first laid on the Ashland Extension, a large number of the cross-ties were of soft wood, cut along the line of the road; many of these had decayed, and oak ties were put in during the season to replace them. The bridges were found too weak for the heavy trade of the road, and new timbers, rods, and bolts were introduced to strengthen them. The road at Glen Carbon was undermined during the summer, and a relocation for some distance became necessary in order to place the track upon the bottom rock of the vein; at the point of crossing the vein, heavy timbers were put in to support the top rock, and the material from the excavation was then filled into the openings from which the coal had been taken, and sustained by the props and laggings. The other portions of track in this vicinity are supposed to be comparatively secure. The old tenant-house at the junction was removed to this point, and rebuilt for the use of the person employed to inspect the mines in the neighborhood of the road.

At Meckesburg, the road was secured by propping the top rock for a distance of one hundred and seventy feet.

At the commencement of the season new hoisting wheels were erected at the planes, having sufficient strength to raise twelve or fifteen loaded cars at a time; they are constructed

with an improved form of recess for the blocks of wood upon which the rope travels that adds much to their firmness and durability. The working of this plan of hoisting machinery has been highly satisfactory; the $1\frac{1}{2}$ inch ropes put in service in the beginning of 1857, had raised about 500,000 gross tons of coal besides the weight of the cars, and considerable miscellaneous freight, when they broke with a load of seven heavy cars, weighing in the total about fifty gross tons. An examination of their condition showed that the covering wires were not perceptibly worn, while the inside of the strands were badly cut by abrading together, and so much weakened as to render their further use unsafe for the work required of them; they were removed, and the new ones, measuring two inches in diameter, were placed in use. The experience acquired in the use of wire ropes, has suggested a method of protecting them from abrasion which will probably add greatly to their durability. It was expected that the trade would require some increase of power, and two new boilers were set at the lower plane, and one at the upper plane. Some necessary improvements were made in the engine and boiler-rooms, and in the means of supplying water to the tanks. When the large ropes were put in use, it was found necessary to increase the number of bearing pulleys upon the planes, and over four hundred new ones were made for this purpose. The repairs of the machinery and other fixtures of the planes will be light this winter; and an opportunity will consequently be given to fill the trestling of the lower plane with coal dirt. The long culvert at this point is nearly finished, and all the fallen timber and rubbish which might convey fire to the coal bank have been removed.

The water station at the Locust Run Junction failed during the dry weather, and a new one had to be erected near the mouth of Wild Cat Run, where an abundance of good water is now obtained; this stream is not likely to be disturbed by any mining operations. Seventeen hundred and fifty feet of track and seven new switches, were laid about the foot of the lower plane and on Big Run, to add to the facilities for hoisting and working the Big Run Branch. The lateral to the new colliery of Messrs. Geo. C. Potts & Co. on this branch, was finished and

brought into use this season; the total length of the lateral and sidings is forty-five hundred and fifty-five feet.

On the Wolf Creek Division, no work except the ordinary repairs of track has been done; a large number of new sills and rails have been put in, and the track is now in excellent condition.

On the West West Division, a new siding, twelve hundred and sixty-four feet long, and two switches were constructed to accommodate the new Phœnix breaker which was erected to supply the one burned last spring. A new lateral about one mile in length to accommodate the trade from a new colliery on the tunnel vein belonging to Messrs. Miller & Stahl is now nearly finished, and will be ready for the opening of trade in the spring.

The township bridge over the railroad at Lewellyn, and two of the railroad bridges near the same place, together with five hundred and ninety-one feet of track, have been renewed during the year. The switches and crossing at the Cressonville lateral, and at Silverton, were also renewed. Ten hundred and ninety feet of track has been relaid upon this section.

On the Muddy Branch Division an addition to the lumber siding at Silverton of one hundred and forty feet, was made to give room to put in the defective cars from the trains. During the summer the Salem Colliery of Messrs. Tyson & Co. was destroyed by fire, and a new one was erected further up the road: to accommodate this, a new siding twelve hundred and sixty-eight feet long was constructed. The bridges on this division were very much decayed, and the one below, and another above Clausers' Saw Mill were renewed. Nineteen hundred and thirty-two feet of track were also renewed.

The Tremont Division had no new work done upon it, but extensive repairs and renewal of cross-ties were made during the season. Twenty-four hundred and three feet of track were renewed and ballasted above Silverton.

On the Swatara Branch a new water station was erected near Brown & White's colliery. The track is in good order.

No new work has been done on the Middle Creek Division. In the early part of autumn the large colliery was destroyed by fire, and nothing further has since been done upon that branch. The track is in good order.

Nearly every part of the road is in good repair, and will compare favorably with its condition in any previous year. In laying new track and renewing the old, ballasting with broken stones has in all cases been adopted, except upon some of the sidings for the breakers. The depot buildings and tenant houses are in good repair, and since the construction of the waterworks, they are well protected from injury by fire.

No accidents of any importance have occurred to the engines or cars during the year. Two fatal accidents have happened to employees of the Company—one from absence of mind, and the other from the breaking of a wheel of a car.

Motive Department.

The locomotives and stationary machinery owned by the Company, are in about the same order as is usual at the close of the shipping season. Some of them need general repairs, but the greater portion of them are in good working order. The stationary engines at the planes, and the machine shops, together with the repair machinery, are all in good condition, and require no additions the present year.

One new locomotive, of the largest class, built by Messrs. M. W. Baldwin & Co., was placed in service during the past year. All the engines regularly employed in the coal trade are anthracite coal-burners, and the engine employed to haul the passenger train is also a coal-burner. The subject of coal burning in locomotives has become one of great importance to railroad management. The gradual disappearance of our forests, and the increasing difficulties and expense of procuring wood in many parts of the country for the supply of fuel for locomotive engines, has called the attention of railroad managers to the necessity of substituting coal for wood, in generating steam.

While engines for burning bituminous coal have been in-

roduced with varied results upon many of the railroads in this ountry and Europe, the use of anthracite coal in locomotives as been confined almost exclusively to the roads lying partly, r entirely within the anthracite districts of the United States. The causes for its limited use are probably to be found in the greater difficulties attending its proper combustion, and the rapid deterioration of the furnaces in which it is burned. These prominent objections to its general introduction are not, however, insurmountable, and in compliance with your request, I devote a portion of my report to the history of its introduction upon this road, with a brief but reliable statement of the results obtained.

There are twenty-five of the engines upon this road in which anthracite coal is used as fuel; and all of them burn it well and make an abundance of steam for the severe service that is required of them. A peculiarity of this service is the necessity for frequently reversing the engines in stopping and starting, while putting away the light or empty cars at the mines, and receiving from the various sidings the loaded cars for the return train; and, moreover, as each engine is employed to weigh its train at the scales, it has to be reversed from twenty to thirty times in weighing a train of one hundred cars. There is probably no road in the world of equal extent, which presents the same necessity for frequently reversing the engines as this, and any one familiar with burning coal knows how it disturbs the regularity of its combustion; and when they consider the fact that the grades of the road vary from a level to two hundred and fifty feet per mile, they can have a better conception of the obstacles in the way of attaining success in coal-burning in our engines. I propose to give first the history and peculiarities of each engine, and then proceed to describe the method of firing, the kind of coal used, and the manner of repairing the furnaces, flues, &c.

No. 3 was built as a wood-burner by M. W. Baldwin & Co., in 1847, but was rebuilt at the Company's shops in 1857, and put into service as a coal-burner this year; it weighs about sixteen tons; has 8 feet 69 in. grate area; No. of iron tubes, 87; length of tubes, 11 ft. 2 in.; diameter of tubes, 2 inches; diameter of cylinder, 13½ inches; length of stroke, 20 inches;

No. of drivers 6, connected. This engine burns coal without difficulty, and makes steam freely. The fire-box is new.

No. 4 was built by Norris Brothers, of Philadelphia, in 1847 and was formerly a wood-burning engine, but was changed to a coal-burner in 1852. It weighs 16 tons; grate area, 7 feet 77 inches; No. of iron tubes, 106; length of tubes, 10 feet diameter of cylinder, 12½ in.; length of stroke, 22 inches; No of drivers, 6, connected. The fire-box was renewed when it was changed to a coal-burner, but not enlarged, nor was the form of the boiler changed. The engine burns coal well, and makes steam freely. The only change made to adapt it to burning coal was to raise the grate bars, and put on an open stack and feed-water heater; it may be mentioned here that all the engines upon the road have shallow furnaces, and open telescopic stacks for regulating the intensity of the blast, with feed-water heaters placed in their base. The fire-box is still in good order in this engine.

No. 5, built by Norris Brothers, in 1847, was a wood engine, rebuilt and changed to a coal-burner in 1853; weight 17 tons; grate area 7 ft. 77 in.; No. of iron tubes 106; length of tubes 10 ft.; diameter of cylinder 12½ in.; length of stroke 22 in.; No. of drivers 6, connected. The fire-box was renewed when the engine was changed to a coal-burner, but no alterations were made in its size or form; it is now in good condition. This engine burns coal well, and makes plenty of steam.

No. 6 was built by Norris Brothers in 1847, and weighs 18 tons; it has 4 driving wheels, connected, and a truck. It was put upon the road as a coal-burning engine, although differing little from a plain wood engine, except in having an open stack, without any spark-arrester, and a larger grate area; the grate area is 9 ft. 90 in.; No. of iron tubes 106; length of tubes 10 ft. 2 in.; diameter of cylinder 12½ in.; length of stroke 22 in. The water space around the fire is quite narrow in this engine, which impedes the circulation of the water, and makes the furnace sheets more liable to deterioration than is the case with those having a wider water space. About a year after it was first put in service, the fire-box was found so much impaired as to require its renewal, and it was accordingly rebuilt; and after the lapse of five years, it was again repaired by cutting

away the sheets just above the fire line, and replacing the defective parts; the engine has, therefore, had one new fire-box, and part of another, in eleven years of hard service; it is at present in good order, and with fair usage may last several years.

The experience acquired in making these repairs was of great service to us, as it showed that when the crown and flue sheets were not injured, the cost of rendering the fire-box nearly as good as a new one would be comparatively small, and the loss of time of the engine would also be less than by taking out the whole furnace.

No. 8 was built by M. W. Baldwin & Co., of Philadelphia, and placed in service April 8th, 1848. Its weight is 16½ tons; grate area 10 ft. 36 in.; No. of iron tubes 128; length of tubes 8 ft. 10 in.; diameter of cylinder 14 in.; length of stroke 20 in., No. of drivers 6, connected. This engine was placed upon the road as a coal-burner, but, like the one just described, it did not differ from the wood-burners except in the size of the furnace and the stack. It burns coal well, and makes steam very freely. In 1850, the furnace became defective, and was renewed; and again, in 1856, it showed some signs of failure around the fire, and was repaired in the same way as was done with No. 6. It is now in good order, and will last for several years.

No. 9, built by Norris Brothers, was placed upon the road as a coal-burner in 1848; weight 18½ tons; diameter of cylinder 12½ in.; length of stroke 22 in.; grate area 8 ft. 128 in.; No. of iron tubes 94; length of tubes 10 ft. 2 in.; No. of drivers 4, connected. The fire-box, in this engine, has never been renewed nor extensively repaired, although it has been in almost constant use for more than ten years. This exemption from deterioration is doubtless due, in some degree, to the quality of the iron, but I ascribe its great durability mainly to the greater width of water space around the fire, thus insuring free circulation around the sheets, and consequent protection against the effects of the intense heat of the coal fire. This furnace will last some years longer, with ordinary care. The engine makes steam rapidly, and burns coal well.

No. 10 was built by M. W. Baldwin & Co., and put upon the road April 26th, 1852; it has six wheels connected, and weighs

21 tons; the diameter of cylinder is 16 in.; length of stroke 20 in.; grate area 11 ft. 81 in.; No. of iron tubes 126; length of tubes 9 ft. 9 in. The furnace of this engine has been repaired by renewing the portion of the sheets next to the fire, in the same way as described in some of the other engines. The engine has been in constant use, hauling at all times maximum loads; the fire-box is now in good condition.

Nos. 11 and 12 were built by M. W. Baldwin & Co., from the same patterns as No. 10, and were placed in service in May and August, 1852. They have been in constant use since they came upon the road; the fire-boxes require the renewal of the lower part of the fire sheets as in No. 10; in other respects they are in good condition.

No. 13 was built by M. W. Baldwin & Co., and put upon the road June 11th, 1853; it weighs 24½ tons; grate area 13 ft. 24 in.; diameter of cylinder 16 in.; length of stroke 20 in.; No. of iron tubes 118; length of tubes 4 ft. 6 in.; No. of driving wheels 8, connected. This engine has been in regular service all the time since it first came upon the road, except when it has been in the shop for slight repairs to the machinery. The furnace is in good condition, and will last, without extensive repairs, for two or three years; and then, from present indications, it will only be necessary to renew the lower part of the fire sheets to make it nearly as good as new.

No. 14 is a Baldwin engine, of the same size and pattern as the one just described, and came upon the road June 23d, 1853. It has been constantly employed since that period, except when laid up for occasional repairs of machinery. The furnace is in good order.

No. 15 is the same pattern of engine, and was put in service July 2d, 1853. It has been in regular use, and the furnace is in good condition.

No. 16, an engine of the same pattern, came to the road June 13th, 1854, and has been in regular use since; the furnace is in good order.

No. 17, also of the same pattern, has been in use since June 23d, 1854: the furnace is in good order.

No. 18, of the same pattern, has been in use since July 10th, 1854; the furnace is in good order.

No. 19, same pattern, came into service the 8th of June, 1855, and is still in good condition.

No. 20, same pattern, was put upon the road July 11th, 1855, and continued in use till the following year, when through the carelessness of the engineer, the crown sheet was overheated, and settled down so as to create apprehensions in regard to its safety, and it was deemed prudent to renew the fire-box because it was probable that the tube and fire sheets were similarly affected; the furnace is now in good order.

No. 21, same pattern, came upon the road Aug. 8th, 1855, and has been regularly employed since that time; the fire-box is in good condition.

No. 22, same pattern, was placed in service Oct. 23d, 1855, and is still in good order.

No. 23, same pattern, was put in use April 22d, 1856; the furnace is in good order.

No. 24 was placed in service on this road May 8th, 1856. It had been used on the Philadelphia and Sunbury Railroad one season, when it was purchased by the Mine Hill Co. It is a Baldwin engine, of the same pattern as the others just described; the furnace is in good condition.

All the engines of this pattern burn coal well, and make steam without difficulty.

No. 25 was built by M. W. Baldwin and Co., and placed in service May 9th, 1856. It weighs 30 tons; No. of driving wheels 8, connected; grate area 16½ feet; No. of iron tubes 147; length of tubes 11 ft. 7½ inches; diam. of cylinder 19 inches; length of stroke 22 in. This engine has been employed upon the long heavy grade to the summit of the Broad Mountain; has always made an abundance of steam for the heavy service required of it; burns coal well, and the furnace is in good condition.

No. 26 is the same pattern of engine, and was placed upon the road July 29th, 1856; the furnace is in good order; its place of running is the same as the *last* named.

No. 27, same pattern, was put in use May 16th, 1857. It is also employed on the Broad Mountain grade, and burns coal well, and makes plenty of steam; the furnace is in good order.

No. 28, same pattern, was put in use May 17th, 1858; it

runs on the same steep grade, and makes steam freely; the fire-box is in good order.

The engines used upon this road have nothing to distinguish them from wood-burners, except that the fire-box is larger in area and less in depth; they combine great strength with compactness, and are constructed in the most substantial manner to adapt them to the heavy loads they are required to haul. The light trains vary from a hundred to one hundred and forty cars, and the loaded trains from one hundred to two hundred and fifty cars. It is a rare thing to see an engine on this road stopped by want of steam; they generally blow off steam the whole distance up the long mountain grade with a maximum load. The ordinary work of a thirty ton engine is a train of a hundred and thirty or forty cars taken from Schuylkill Haven to the summit of the Broad Mountain and returned loaded; the distance run in doing the work is about sixty-five miles, and the quantity of coal consumed is about four tons. The total rise in the road is over nine hundred feet.

Although a preference is given to some particular veins on account of greater purity, we use all kinds of Anthracite coal in our engines, that are free from "bone" and "slate." It is our practice to select the purest lump coal, and break it with a hammer in the tank to the size of steamboat coal; we prefer this mode of breaking on account of preserving the sharp angles and brighter surfaces produced by this mode of fracture. Coal that is broken by rollers and passed through screens has the sharp angles destroyed by crushing and abrasion, and will not ignite so readily. When the wood used in kindling the fire is burned out, the coal that has been ignited by it is spread evenly over the grate, and care is taken to keep it in that condition. The fire should never be more than six or eight inches deep, and the experienced fireman is careful not to throw in too much coal at a time, in order to avoid chilling the surface of the fire, and increasing the quantity in the furnace faster than it is consumed; a little skill is requisite to spread the coal evenly over the surface of the fire as it is thrown in.

In some instances the engines in charge of our best firemen have been in service sixteen hours without renewing the fire, and from the nature of our trade it becomes necessary to wait

a long time for the cars to be loaded; in such cases, when the engine is ready to move, the surface of the fire is stirred and a very small quantity of fresh coal is thrown over it, which is ignited rapidly by the blast from the exhaust steam, and soon the fire, under this careful management, is made to burn as well as ever.

From careful observation I have arrived at the conclusion that the successful and economical use of Anthracite coal in locomotives, depends as much upon the industry and experience of the fireman as upon the structure of the engine. I have known one person to burn out a set of grate bars in a day, whilst another using the same kind of coal would make them last for many months.

One man will tend his fire so as to make an abundance of steam, whilst another, under as favorable circumstances, cannot raise sufficient to move his train; and the difference in these instances is not in the engine, nor the fuel, but in the men.

The rapid destruction of the fire-box and grate-bars has been a great hindrance to the introduction of anthracite fuel; but, if builders will give a little attention to this, they can do much to remove the objection. It is obvious that the lower parts of the furnace-plates are the most liable to destruction from direct contact with the fire; and when these parts are destroyed, the usual practice is to renew the entire fire-box, which, in most cases, would not be necessary, if the lower part of the furnace was formed by a sheet extending around it, and joined to the upper portion (above the fire line), by a horizontal, instead of a vertical seam; then the affected parts could be removed, and other sheets substituted at comparatively little cost. I have before remarked that where the flue sheet is not injured, we cut away the lower parts of the fire sheets, and renew that part only; this can be done at about one-tenth the cost of a new fire-box. On many roads the men are permitted to throw in large lumps of coal, but this practice is very injurious to the furnace, because the spaces between the lumps serve as flues to direct the intense heat against a particular part of the fire-box, while other portions are comparatively cool; a vacuum may thus be caused at some point, and when the coal is burned so as to close up this flue, the water will rush back to the overheated part,

and cause a "blister" to rise on the side next the fire; this effect upon the flue sheet is still more marked.

We were formerly troubled with leaky flues; but since we have abandoned the practiec of throwing in large lumps of coal against them, the difficulty has ceased; the regularity in supplying the feed water, both in temperature and quantity, is another important means of preventing leaky flues. When the ends of the flues are worn so as to cause them to leak, whieh is not often the case till they have been in use several years, we take them out, and cut off about six inches of the ends, and weld on a piece of lap-welded iron tube, and put them in again. The main part of the tube, not exposed to the fire, does not deteriorate very rapidly.

When we first began to burn coal, the fireman were very much prejudiced against it, but now they will not fire a wood-engine, if they can get a coal-burner; nearly all the objections whieh formerly existed against coal engines have been removed—there is less danger from sparks; the fuel requires no housing; in wet or dry weather, it is always in a condition to make steam; and a tank of the ordinary size will carry enough to run a day. The stoppages for fuel are therefore avoided.

In many of the States wood is yet abundant, and the price so low that no necessity exists for seeking a substitute; but in some of the older States great difficulty is experienced in procuring sufficient wood for the use of railroads; there the anthracite coal of our region should be substituted. It burns without giving out much dust or gas, and is, in that respect, far preferable to wood or bituminous coal. The furnaces of many wood-engines are large enough to burn coal well, and hence the expenses attending the change would be small. Firemen from the railroads in this vieinity, who are not only acquainted with coal firing, but with the best qualities of coal for the purpose, could be sent to such roads, and soon all the employées would become familiar with coal firing. Three-fourths of our brakemen are good coal firemen. It is no longer an experiment; ten years' success in coal burning, in a region where good oak wood can be purchased for two dollars and twenty-five cents a cord, ought to convince the most skeptical of its great economy; and the fact that the men prefer to fire with

coal rather than wood, is an evidence that its combustion in our plain furnaces is attended with very little trouble.

These remarks have been prolonged, because the subject is an important one to the railroad interests of the country, and also to the interests of your Company, as transporters of anthracite coal. The general introduction of this kind of fuel upon the Eastern railroads, would open a new market to the product of this region, which would be of great value to the trade; and I feel confident that if the Managers of their roads would visit our road, and examine for themselves, our system of coal burning in locomotives, they would be induced to give it a trial upon their engines without delay.

In concluding my report, I desire to refer to my assistants, and express my obligations to them for the aid they have given me in the supervision of the work of the Railroad and Motive Power Departments, and mention their faithful devotion to the general interests of the Company.

Respectfully submitted,

R. A. WILDER,

Engineer and Superintendent.

January 1, 1859.

Statement of the Performances of Engines for 1858.

No. of Engine.	Builder.	Weight. Tons.	No. of Drivers.	Miles Run.	Light Cars.	Loaded Cars.	Trucks.	Tonnage of Coal.
Engine No. 1*a*	Baldwin	15½	6	3,067				
" 2*a*	"	15½	6	8,220	42	42		116 12
" 3*a*	"	16½	6	2,294	200	200		819 00
" 4*b*	Norris & Bro.	16	6	7,064				
" 5*c*	"	16 8-20	6	11,920				
" 6*d*	"	17	4	16,327				
" 7*e*	Baldwin	19	8	3,798				
" 8*b*	"	16	6	5,298				
" 9*f*	Norris & Bro.	17½	4	9,444				
" 10*g*	Baldwin	21	6	1,545	2,667	2,624	73	11,787 10
" 11*g*	"	21	6	11,841	19,306	19,487	869	82,252 16
" 12*g*	"	21	6	8,805	13,807	14,351	726	62,420 14
" 13*g*	"	24½	8	8,863	14,422	14,546	445	63,739 18
" 14*g*	"	24½	8	9,920	26,825	26,036	879	110,194 14
" 15*g*	"	24½	8	9,967	16,517	16,734	794	71,185 06
" 16*g*	"	24½	8	11,179	26,509	27,243	954	119,390 17
" 17*g*	"	24½	8	8,584	22,974	23,305	900	101,029 06
" 18*g*	"	24½	8	11,291	26,115	25,373	800	109,535 06
" 19*g*	"	24½	8	11,604	22,015	22,679	899	96,171 05
" 20*g*	"	24½	8	12,197	20,052	20,107	863	89,204 09
" 21*g*	"	24½	8	11,748	25,387	26,110	751	108,543 15
" 22*g*	"	24½	8	10,061	11,898	12,442	370	52,750 19
" 23*g*	"	24½	8	8,451	11,584	11,888	387	51,099 05
" 24*g*	"	24½	8	12,586	26,390	26,990	1,029	117,891 15
" 25*g*	"	30	8	7,636	10,967	10,575	338	43,301 16
" 26*g*	"	30	8	11,166	12,808	12,282	350	52,614 18
" 27*g*	"	30	8	10,236	14,242	13,519	365	56,923 06
" 28*g*	"	30	8	6,029	8,105	8,051	187	33,521 05
Middletown*h*	"	11	2	8,000				
Gem*i*	Rebuilt at Mine Hill Depot	7	2	8,566				
Mississippi*j*	Baldwin	13	2					
				267,707	332,832	334,584	11,979	1,434,494 12

a Trucking, and hauling coal cars at planes. *b* Hauling coal at Ashland. *c* Hauling coal on Big Run.
d Hauling passengers and freight

RECEIPTS.	
Balance on hand 1st Month 1st, 1858	$30,903 72
Bills receivable extended at Bank	440,996 47
Wm. Newell, Collector (cash remittances)	59,684 20
For bills payable discounted	83,373 34
" temporary loans	87,000 00
" sales 1,000 shares stock	61,118 00
" sales scrip, stock, and loan	20,955 50
" instalments on loan of $250,000	11,087 50
" instalments on script stock	250 00
" rec'd from J. H. Gillingham, cashier (small debts)	2,035 52
" rec'd from Wm. Newell, collector (small debts)	1,626 24
" interest received	768 68
" rents received	466 67
" tolls account (old)	450 00
" dividend refunded	19 00
" unpaid tolls and protests	8,163 60
	$808,895 44

The undersigned, members of the Committee on Accounts, having examined the account of receipts and disbursements of Samuel Mason, Treasurer of the Mine Hill and Schuylkill Haven Railroad Company, from 1st Mo. 1st, 1858, to 12th Mo. 31st, 1858, inclusive, find the same correct. The receipts, including the balance in hands 1st Mo. 1st, 1858, amount to $808,895 44

And the payments, for which his vouchers were presented, amount to 767,381 38

Leaving balance in his hands of $41,514 06

due the Company, on the 1st inst., which is in conformity with bank settlement to same date.

JOHN LIVEZEY,
I. P. HUTCHINSON.
JOSHUA W. ASH,
S. MORRIS WALN,
Committee on Accounts.

PHILADELPHIA, *1st Mo.*, 1859.

PAYMENTS.		
To J. H. Gillingham, cashier road department		$136,734 78
" " " motive power department		91,492 80
" locomotive engine		11,330 95
" expenses motive power paid in Philada.	$4,339 02	
" oil for engines " "	6,131 64	
		10,470 66
" dividend No. 45		41 25
" dividend No. 46		63 00
" dividend No. 47		678 00
" dividend No. 48		149,880 00
" dividend No. 49		114,203 75
" expenses of road over Broad Mountain		9,775 45
" bills payable		125,929 24
" interest account		2,106 65
" interest upon instalments of loan of $250,000		15,876 59
" J. A. Roebling for wire ropes		10,544 00
" temporary loans		63,000 00
" current expenses, Schuylkill Co., paid in Philada.		2,464 63
" salaries, rent, office expenses, &c., " "		8,324 86
" lateral road to Locust Dale Colliery		8,131 75
" spikes		1,072 25
" expenses of protests		18 66
" State taxes on dividends		5,242 11
" balance		41,514 06
		$808,895 44

Statement showing the Income of the Company for the Year 1858, *and the Expenditures chargeable thereto.*

RECEIPTS.

The net receipts for tolls and the use of motive power, and the Company's share of the passenger business, to which are added unpaid tolls of 1857, since collected, were		$492,351 94
From which is to be deducted for tolls unpaid .		3,884 93
Leaving as the balance of the tolls account .		$489,467 01
To this is added balance to credit of rent accounts		1,316 63
Profits on sales of stocks and loans . .		12,513 00
Old tolls account		987 57
Making total income		$504,284 21

PAYMENTS.

Expenses of motive power department		$133,311 63	
Oil for engines		6,131 64	
Current expenses, road department		50,918 88	
Wire ropes . .	$10,544 00		
Spikes . .	1,072 25		
		11,616 25	
Salaries, rent, and incidentals, in Philadelphia		8,224 86	
Interest on loan of $250,000 .		15,876 59	
Balance interest account . .		1,355 01	
Iron rails rerolled		1,559 89	
Dividend declared in Aug. 1858, 4½ per cent.		114,750 00	
Dividend declared in Jan'y, 1859, 5 per cent.		140,000 00	
State taxes upon the dividends of August last, and on the dividend now declared		12,737 50	
			$496,482 25
Balance to repair fund			$7,801 96

Net Tonnage of Coal and Miscellaneous Freight transported during the Year.

Years.	Tons of 2240 lbs.
1831	17,559 00
1832	65,420 00
1833	77,072 00
1834	42,616 00
1835	66,130 00
1836	107,845 00
1837	170,230 00
1838	142,485 00
1839	150,919 00
1840	171,409 00
1841	238,180 00
1842	195,014 00
1843	257,012 00
1844	312,718 00
1845	410,592 10
1846	469,904 07
1847	583,590 13
1848	609,330 05
1849	612,315 05
1850	640,998 14
1851	842,809 11
1852	1,025,221 06
1853	1,016,733 10
1854	1,181,726 10
1855	1,534,876 13
1856	1,614,887 11
1857	1,564,119 17
1858	1,452,083 02
	15,573,798 14
Add amount of discount, ranging from 5 to $7\frac{1}{2}$ per cent.	783,988 16
Whole tonnage	16,357,787 10